AMENDMENTS TO THE SPECIFICATION

Please replace paragraphs [0024] with the following amended paragraph:

[0024] Turning now to FIG. 2, a method 200 for fault diagnosis in a turbine engine is illustrated. Method 200 lists the general steps that can be performed in a fault diagnosis method using the embodiments of the present invention. The first step 202 is to receive sensor data from the turbine engine, with the sensor data providing the basis for the analysis and fault detection. The next step 204 is to generate residuals from the sensor data. Generating residuals can be accomplished using a variety of techniques, such as by comparing the sensor data to expected values and determining the residual difference. The next step 206 is to augment the residual data. The residual data can be augmented using a variety of techniques, such as by determining the rate of change of residual data or determining margin levels. The next step 208 is to fuzzyify the augmented data set. The augmented data set can be fuzzified using a plurality of membership functions, with the data mapped into the membership functions as a technique to classify the data. The next step 210 is to apply fuzzy logic rules to the fuzzified sensor data. The fuzzy logic rules define relational rules between variables that imply certain outputs. The next step 212 is to aggregate the output of the fuzzy rules. The next step 214 is to defuzzify the logic rule output to generate an output that is indicative of the likelihood of an engine fault based on the sensor data. Steps 212 and 214 can be used to generate this likelihood in a variety of ways, such as by adding the results of each of the rules and finding the centroid or bisection of the resulting function. The next step 216 is to pass the results to a diagnostic system to fully interpret the results and pass the diagnostic information to the diagnostic system for output to the user of interest.

Please replace paragraphs [0027] with the following amended paragraph:

[0027] Specifically, the sensor data processor receives the N2, WF, and EGT sensor data and passes that data to a series of residual generators. In particular, the N2 sensor data is passed to a ΔN2 Generator that compares the measured N2 sensor data to expected values and determines the residual difference. Likewise, the WF and EGT sensor data are passed to a ΔWF and ΔEGT Generators that compares the WF and EGT data to expected values and determine residuals differences. The expected values for each of the measured values can be generated in a plurality of ways. All of the methods generally involve some type of engine model that represents some relationship between the engine core speed (N1), ambient conditions and the measured values N2, EGT and WF. This model can be either physics based or empirical in nature but in the most simple terms can be a function Yi = Fi(N1, ambient_conditions) where i is N2, EGT or WF. There are many other well known techniques for generating residuals for the engine parameters of interest and any one which produces results of adequate precision may be used.